

WHAT IS CLAIMED IS:

1. A low dispersion optical fiber characterized by;

a difference between a maximum value and a minimum value of a dispersion value in a wavelength band having a bandwidth of 30 nm within a wavelength range of 1450 nm to

5 1650 nm of 2 ps/nm/km or less,

a zero dispersion wavelength outside of a wavelength range of 1450 nm to 1650 nm,

an effective core area(A_{eff}) at a wavelength of 1550nm of $50\mu m^2$ or more and $70\mu m^2$ or less,

a bending loss at a wavelength of 1550nm when bent at a diameter of 20mm of
10 20dB/m or less,

an effective cutoff wavelength of 1290 nm or more a dispersion at a wavelength of 1550nm of 2 ps/nm/km or more in absolute value, and a single mode operation in a wavelength band having a bandwidth of 30nm within a wavelength range of 1450nm to 1650nm.

15 2. A low dispersion optical fiber characterized by;

a zero dispersion wavelength outside of a wavelength range of 1450 nm to 1650 nm,
an effective core area(A_{eff}) at a wavelength of 1550nm of $45\mu m^2$ or more and $70\mu m^2$ or less,

a bending loss at a wavelength of 1550nm when bent at a diameter of 20mm of
20dB/m or less,

20 a dispersion at a wavelength of 1550nm of 2 ps/nm/km or more in absolute value,

a positive dispersion slope of 0.035 ps/nm²/km or less over a wavelength range of 1450nm to 1650nm, and

a single mode operation over a wavelength range of 1450nm to 1650nm

3. The optical fiber of claim 2, further characterized by the effective core area (A_{eff}) at a wavelength of 1550nm of $50\mu m^2$ or more and $70\mu m^2$ or less.

4. A low-dispersion optical fiber comprising:

5 a center core having a maximum refractive index n_1 , and a diameter a_1 ;
a first side core, provided on the outer periphery of said center core, having a minimum refractive index n_2 , and a diameter a_2 ;

a second side core, provided on the outer periphery of said first side core, having a maximum refractive index n_3 , and a diameter a_3 ; and

10 a cladding, provided on the outer periphery of said second side core, having a refractive index n_c ,

where $n_1 > n_3 > n_c > n_2$, wherein

a zero dispersion wavelength outside of a wavelength range of 1450 nm to 1650 nm,

an effective core area (A_{eff}) at a wavelength of 1550nm of $45\mu m^2$ or more and $70\mu m^2$

15 or less,

a bending loss at a wavelength of 1550nm when bent at a diameter of 20mm of 20dB/m or less,

a dispersion at a wavelength of 1550nm of 2 ps/nm/km or more in absolute value,

a positive dispersion slope of 0.035 ps/nm²/km or less over a wavelength range of

20 1450nm to 1650nm, and

a single mode operation over a wavelength range of 1450nm to 1650nm

5. The low dispersion optical fiber of claim 4, wherein an intermediate layer having a lower refractive index than the cladding is provided between the cladding and the second side core.

5 6. An optical transmission system comprising a low-dispersion optical fiber, wherein a difference between a maximum value and a minimum value of a dispersion value in a predetermined wavelength band having a bandwidth of 30 nm within a wavelength range of 1450 nm to 1650 nm of 2 ps/nm/km or less,

 a zero dispersion wavelength outside of a wavelength range of 1450 nm to 1650 nm,

10 an effective core area(A_{eff}) at a wavelength of 1550nm of $50\mu m^2$ or more and $70\mu m^2$ or less,

 a bending loss at a wavelength of 1550nm when bent at a diameter of 20mm of 20dB/m or less,

 an effective cutoff wavelength of 1290 nm or more,

15 a dispersion at a wavelength of 1550nm of 2 ps/nm/km or more in absolute value, and a single mode operation in a predetermined wavelength band having a bandwidth of 30nm within a wavelength range of 1450nm to 1650nm.

20 7. An optical transmission system comprising a low-dispersion optical fiber, wherein a zero dispersion wavelength outside of a wavelength range of 1450 nm to 1650 nm, an effective core area(A_{eff}) at a wavelength of 1550nm of $45\mu m^2$ or more and $70\mu m^2$ or less,

 a bending loss at a wavelength of 1550nm when bent at a diameter of 20mm of 20dB/m or less,

25 a dispersion at a wavelength of 1550nm of 2 ps/nm/km or more in absolute value,

a positive dispersion slope of $0.035 \text{ ps/nm}^2/\text{km}$ or less over a wavelength range of 1450nm to 1650nm, and

a single mode operation over a wavelength range of 1450nm to 1650nm.

5 8. An optical transmission system comprising a low-dispersion optical fiber, wherein
a zero dispersion wavelength outside of a wavelength range of 1450 nm to 1650 nm,
an effective core area(A_{eff}) at a wavelength of 1550nm of $50\mu\text{m}^2$ or more and $70\mu\text{m}^2$
or less,

a bending loss at a wavelength of 1550nm when bent at a diameter of 20mm of
10 20dB/m or less,

a dispersion at a wavelength of 1550nm of 2 ps/nm/km or more in absolute value,

a positive dispersion slope of $0.035 \text{ ps/nm}^2/\text{km}$ or less over a wavelength range of
1450nm to 1650nm, and

a single mode operation over a wavelength range of 1450nm to 1650nm

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9. An optical transmission system comprising a low-dispersion optical fiber, wherein
a center core having a maximum refractive index n_1 , and a diameter a_1 ;

a first side core, provided on the outer periphery of said center core, having a
minimum refractive index n_2 , and a diameter a_2 ;

20 a second side core, provided on the outer periphery of said first side core, having a
maximum refractive index n_3 , and a diameter a_3 ; and

a cladding, provided on the outer periphery of said second side core, having a
refractive index n_c ,

where $n_1 > n_3 > n_c > n_2$, wherein

25 a zero dispersion wavelength outside of a wavelength range of 1450 nm to 1650 nm,

an effective core area(A_{eff}) at a wavelength of 1550nm of $45\mu m^2$ or more and $70\mu m^2$ or less,

a bending loss at a wavelength of 1550nm when bent at a diameter of 20mm of 20dB/m or less,

- 5 a dispersion at a wavelength of 1550nm of 2 ps/nm/km or more in absolute value,
a positive dispersion slope of 0.035 ps/nm²/km or less over a wavelength range of 1450nm to 1650nm, and
a single mode operation over a wavelength range of 1450nm to 1650nm.